GETTING STARTED GUIDE

Variable Rate Application for
EZ-Guide® 500 Lightbar Guidance System

Version 4.00
Revision A
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PN 72556−80−ENG

Table of Contents

Introduction

Legal Notices

Related Information

Sources of related information include the following:

- Help – the lightbar has built–in, context–sensitive help that lets you quickly find the information you need.
- Quick reference card – the quick reference card describes the most common features of the lightbar.

Technical Support

If you have a problem and cannot find the information you need in the product documentation, contact your local reseller. Alternatively, go to the EZ–Guide website at http://www.ez–guide.com/.

Initial Setup

Variable Rate Application Upgrade

The Variable Rate Application (VRA) upgrade option is required to:

- Allow the EZ–Guide 500 lightbar to communicate and send rate information to third pary variable rate controllers including:
  - ♦ Hardi 5500 variable rate controller
  - ♦ Raven SCS 400 and 600 series variable rate controllers
  - ♦ Rawson Accu–Rate variable rate controller
- Allow prescription files to be imported to the EZ–Guide 500 lightbar for sending variable rates to any variable rate controller, including the EZ–Boom 2010 system.

Note: The EZ–Boom 2010 system will work with the EZ–Guide 500 lightbar without the Variable Rate Application upgrade. However, the VRA upgrade is required to load prescriptions for EZ–Boom.

Firmware Upgrade Wizard

To upgrade the lightbar functionality for Variable Rate Application functionality, enter an upgrade password.

When you purchase an upgrade from your local reseller, you receive an upgrade password. To enter it:

1. Select *Configuration / System / Password Upgrade.* The *Password Upgrade* screen appears.
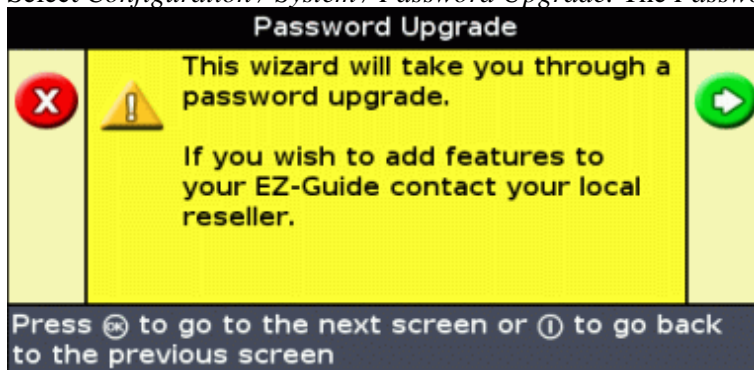
2. Press the OK button. The *Enter Password* screen appears.

3. Enter the password.

4. Select ⬅ and then press (OK) . A screen with an hourglass appears for a few seconds and then the following screen appears:

Password Upgrade

⚠ Password upgrade successful.

The upgrade was successful. The lightbar will now be restarted to take advantage of the new feature.

✔

Press ⊛ to go to the next screen or ① to go back to the previous screen
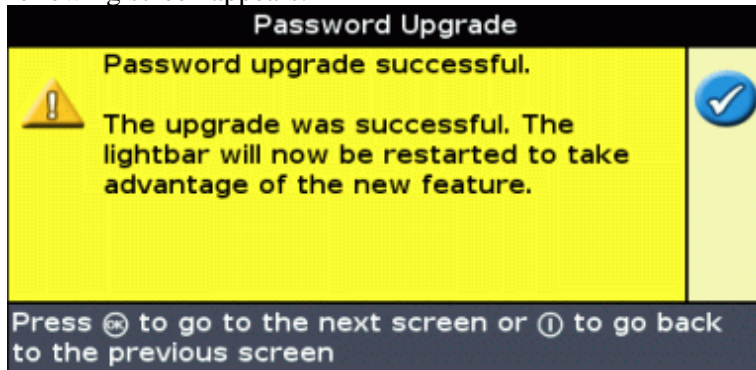
Press (OK) . The lightbar restarts with the new functionality enabled.

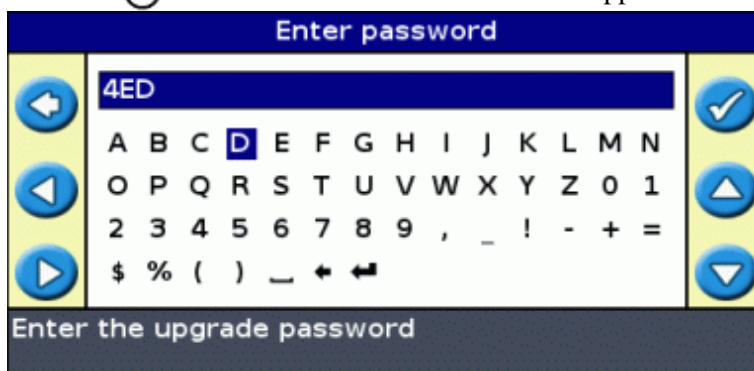*Note: If the message says "Password upgrade failed. The password entered was not valid.",* try entering the password again. If it fails again, contact your local reseller.

Confirm VRA Upgrade

To confirm that the Variable Rate Application (VRA) upgrade is activated correctly, view the *Available Upgrade Options* status screen. To do this:

1. Select *Configuration / Status / Available Upgrade Options* and press (OK) .

Available Upgrade Options

✖	DGPS	No	✔
	Omni* XP/HP	No	
	RTK	No	
	Variable Rate	Yes	

Press ① to leave this screen.
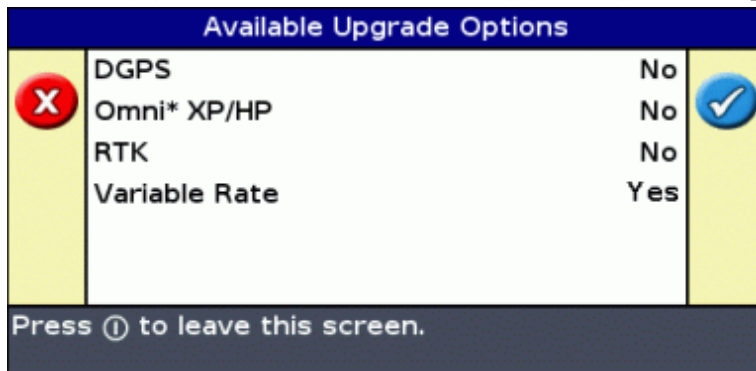
2. Confirm that Variable Rate displays Yes.

Prescriptions

Introduction to Prescriptions

The EZ−Guide 500 lightbar can import variable rate prescription files in Shapefile format. The application rate information from the prescription attribute file (.dbf) is sent to EZ−Boom or a supported third party variable rate controllers to control flow rates.

Note: All prescription files must use geographic WGS84 for the coordinate system.

Variable rate prescription functionality is only available after a password upgrade has been purchased. For more information on purchasing the variable rate prescription functionality, contact your local EZ−Guide 500 reseller.

To enable the variable rate prescription functionality, see Initial Setup .

Note: Managing and using prescription files can only be done when the lightbar is in Advanced mode.

When a prescription is loaded, the following changes appear on the main map screen:

- Prescription polygons are shown as colored areas
- The EZ−Boom information tab contains two new items:
    - ♦ Prescription: Name of the presciption loaded
    - ♦ Target Rate: Target rate from the prescription file
- **P** is displayed in the rate selector box and on the main map to indicate that the prescription rate is being used, rather than the Target 1 rate (**T**)
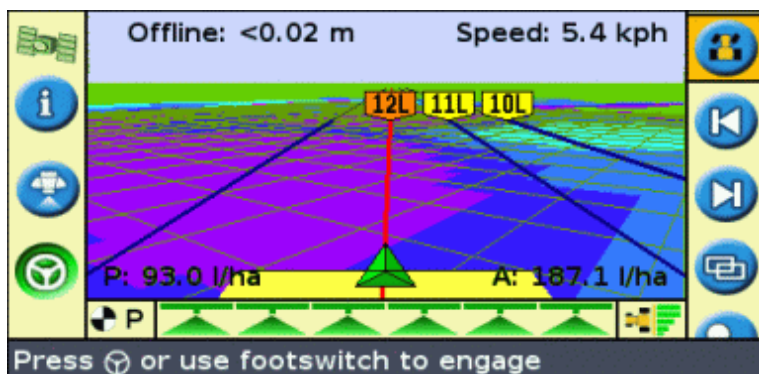
Importing Prescriptions

The EZ−Guide 500 lightbar can import Shapefile prescription files from a USB drive inserted into the lightbar.

Note: All prescriptions must be imported (copied) from the USB drive to the EZ−Guide 500 lightbar. The lightbar cannot read prescriptions directly from a USB drive.

To import a prescription:

1. Using your office computer, copy the three Shapefile files (.shp, .dbf, .shx) into the \AgGPS\Prescriptions\ folder on a USB drive.

   Note: The EZ−Guide 500 will only detect prescription files located in the \AgGPS\Prescriptions\ folder on the USB drive.

   Note: If the USB drive does not already have the correct folders set up, you can insert the USB drive into the EZ−Guide 500 lightbar, turn it on and wait until the lightbar has detected the USB drive, and then turn the lightbar off. The lightbar will automatically create the folders on the USB drive.

2. Insert the USB drive into the EZ−Guide 500 lightbar and turn it on. Wait for the green USB icon to appear on the main map screen.
3. If the lightbar is not already in Advanced mode, change it to Advanced mode by selecting *Configuration / User Mode*.
4. To copy the prescriptions from the USB drive to the lightbar:
   a. Select *Configuration / Data Management / Manage Prescriptions / Get Prescriptions from USB* .
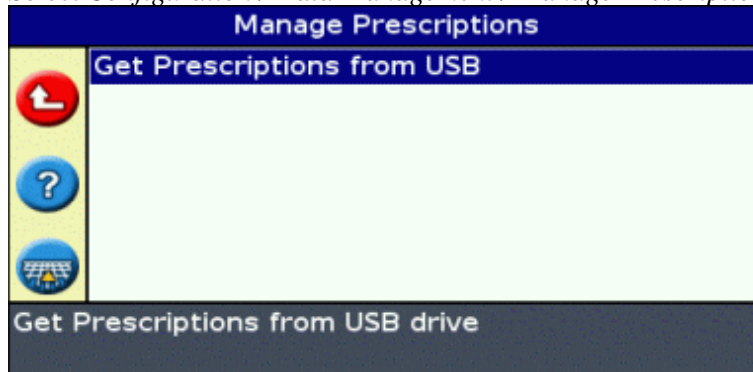
   b. Press (OK) . A warning message appears.
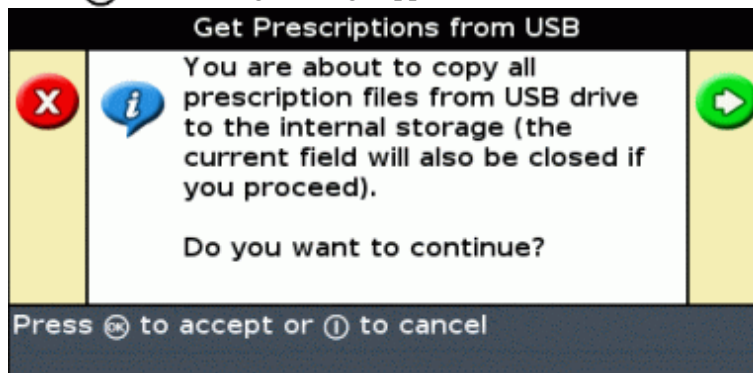
   c. Press (OK) . The prescriptions are copied.

To delete a prescription, select *Configuration / Data Management / Manage Prescriptions / Delete Prescriptions* .

Loading a Prescription

Once a prescription has been imported into the EZ−Guide 500 lightbar, it can be loaded for display.

Prescriptions are loaded as part of the New Field wizard.

After the field is selected, the *Available Prescriptions List* screen appears.
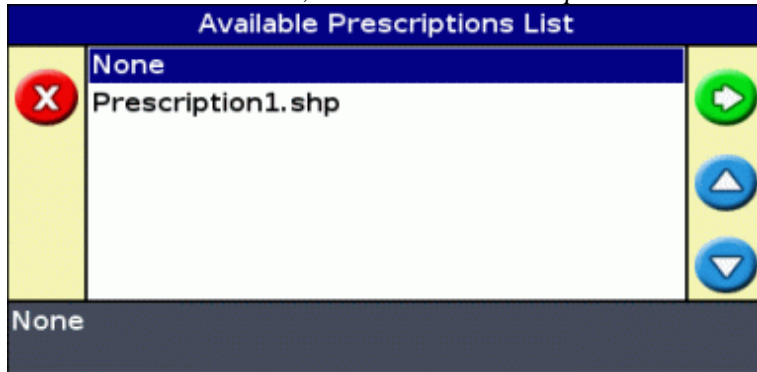
To load a prescription:

1. Press ⊘ or ⊘ to select the prescription to load.

   Note: To continue without loading a prescription, select None.

2. Press ⊛ . The *Prescription Parameters* screen appears.
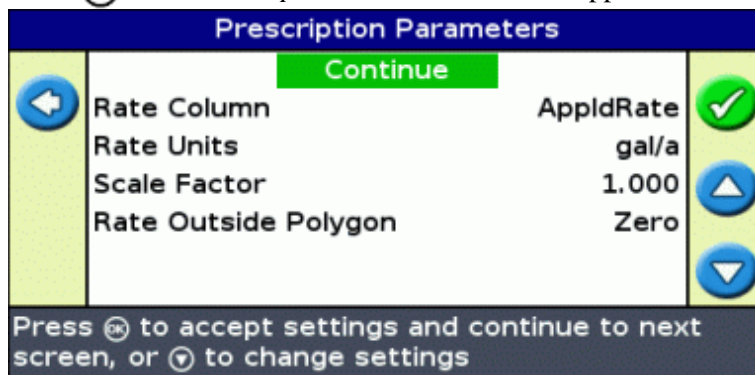
3. Press ⊘ to configure the prescription setup:

ITEM	DESCRIPTION
Rate Column	Column in the prescription .dbf file containing the rate information.
Rate Units	Units that the application rate information is stored in. *Note: For Raven and Rawson controllers, the only option for Rate Units is Custom.*
Scale Factor	Applied to the rate information to scale the application. For example, to apply half or double the specified appliation rate.
Rate Outside Polygon	Rate applied when the vehicle moves to an area not covered by an application rate polygon. There are two options: * Zero – a zero rate will be sent to the controller * Last rate – keep applying the last rate

4. Select Continue and press ⊛ .

   The prescription is loaded.

To change the prescription while in the field, you must reload the current AB line:

1. Select the ⟳ icon and press (OK) . The *Finished With Field?* screen appears.
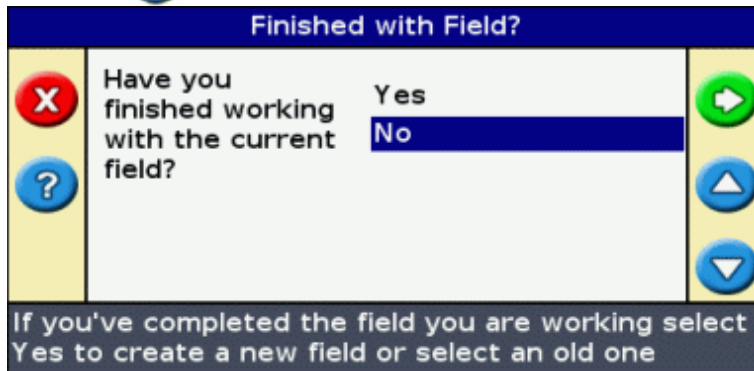
2. Select No and then press (OK) . The *Create New or Select Old Swath* screen appears.
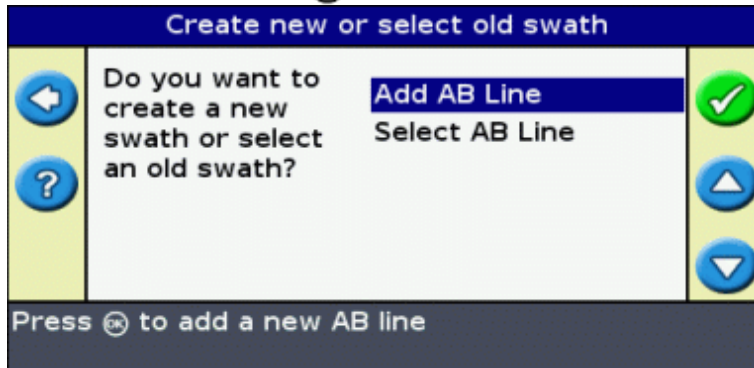
3. Press ⊽ to choose *Select AB Line* and press (OK) .

4. Select the current AB Line and press (OK) . The *Select Stored AB Line* screen appears.

Note: If there is only one AB Line in the current field, this step is done automatically.
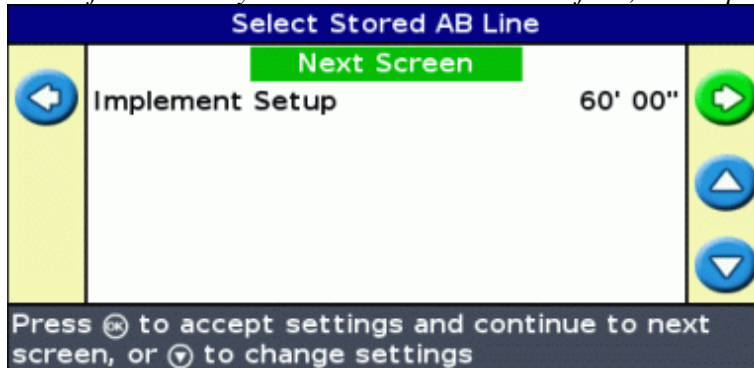
5. Press (OK) to keep the current implement setup. The *Available Prescriptions List* screen appears.

Available Prescriptions List

None
Prescription1.shp
Prescription2.shp
Prescription3.shp

None

6. Select the prescription file you want to load and press ⓄⓀ .

EZ–Boom 2010 System

Connecting the EZ–Boom 2010 System

Connect the EZ–Boom 2010 system to the EZ–Guide 500 lightbar as shown below.
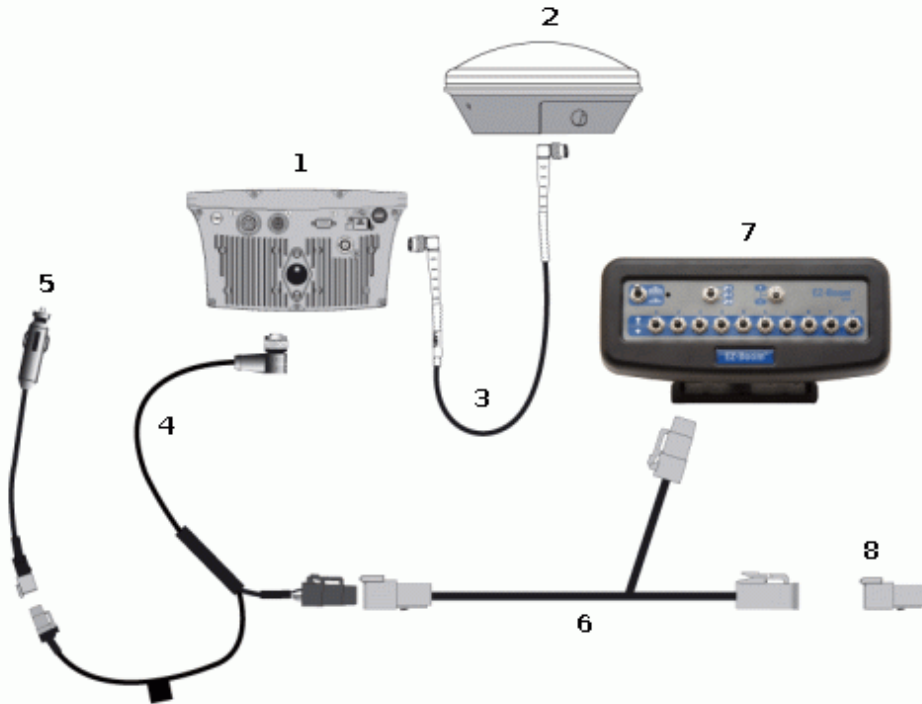
ITEM	DESCRIPTION
1	EZ–Guide 500 lightbar
2	Ag 15 antenna
3	Antenna cable (PN 50449)
4	EZ–Guide 500 power cable (PN 62817)
5	To power
6	EZ–Boom to EZ–Guide 500 cable (PN 61437)
7	EZ–Boom controller
8	CAN terminator (PN 59783)

Connect the EZ–Boom 2010 system to the EZ–Steer 500 system as shown below.
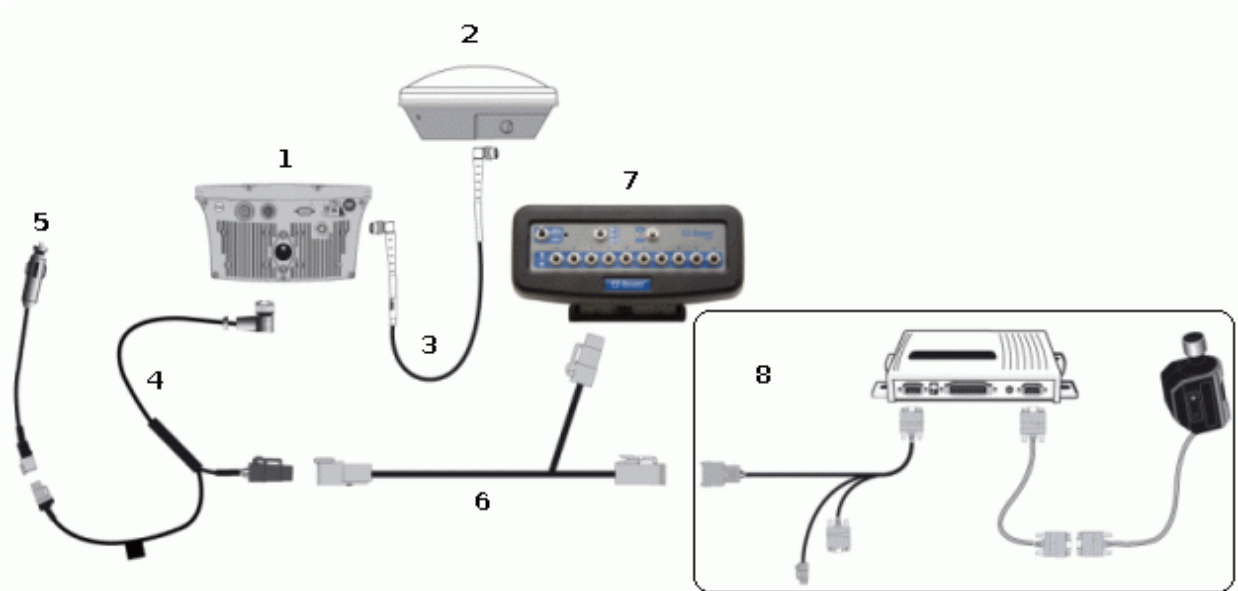
ITEM	DESCRIPTION
1	EZ–Guide 500 lightbar
2	Ag 15 antenna
3	Antenna cable (PN 50449)
4	EZ–Guide 500 power cable (PN 62817)
5	To power
6	EZ–Boom to EZ–Guide 500 cable (PN 61437)
7	EZ–Boom controller
8	EZ–Steer 500 system

EZ–Boom Features

When the EZ–Boom 2010 system is connected to the lightbar, the following features appear or become available:
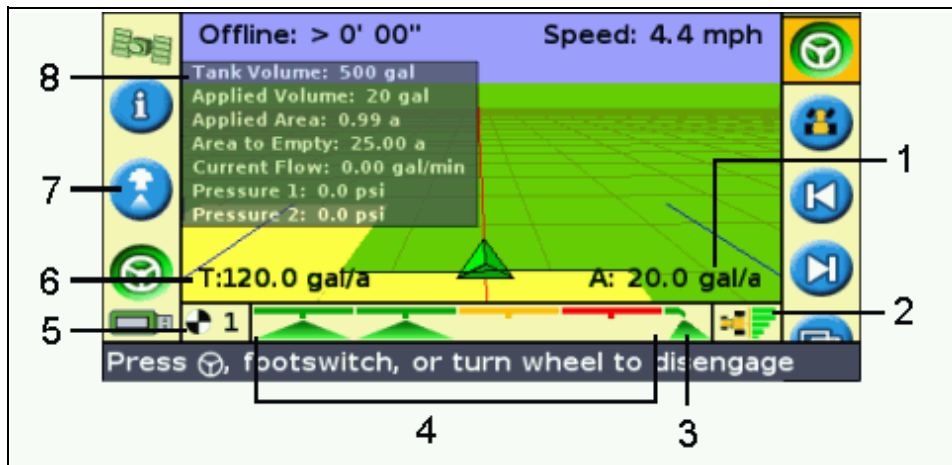
ITEM	DESCRIPTION
1	The actual current rate *Note: If the rate switch position is M (Manual) and the vehicle is not moving, NA is displayed.*
2	Auto/manual switching indicator shows which switching mode the controller is in. * When the controller is in manual switching mode, the indicator is gray. * When the controller is in automatic switching mode, the indicator is in color.
3	Fence nozzle indicator If a fence nozzle is enabled, an indicator appears. Fence nozzle status is represented with the same colors as the boom sections.
4	Boom section status indicators change color to show the current state of each boom section: * Green – The boom section is enabled and spraying. * Orange – The boom section is enabled but not currently spraying. * Red – The section is off (the switch is off).
5	Rate switch position (Rate 1, Rate 2, or Manual) *Note: To use application rates from a prescription file, the rate switch must be set to Rate 1.*
6	The intended target rate *Note: If the rate switch position is M (Manual), the current flow rate (F:) is displayed. If the vehicle is not moving, NA is displayed.*
7	EZ–Boom quick access icon
8	Information tab listing sprayer–specific information

EZ–Boom quick access icon

The icon ![icon] enables you to access the most common EZ–Boom settings more quickly. When you select the icon, the following screen appears:
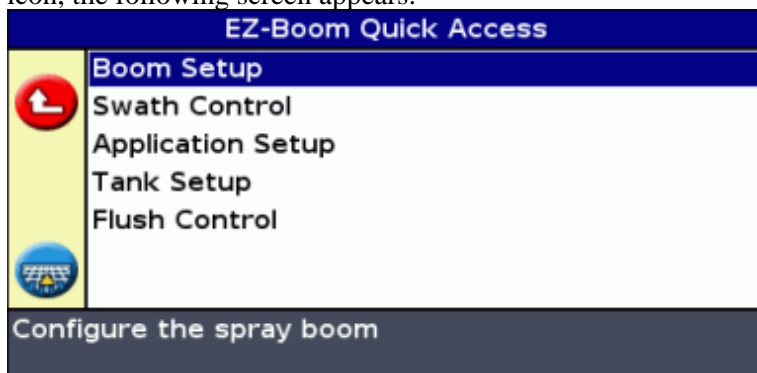
Alternatively, to configure the EZ–Boom 2010 system for use with the lightbar, set the *User Mode* to Advanced and then select *Configuration / Application Control.*

For more information, refer to the *EZ–Boom 2010 System for the EZ–Guide 500 Lightbar Quick Reference Card.*

EZ–Boom Flow Calibration

When you perform the EZ–Boom 2010 system flow calibration:

    1. Enter the *Flow Meter Calibration* number:

  2. Do one of the following:

       ◆ If you know that the setting is correct, press the 🔴 function button to save the calibration

          number that you entered and exit the menu. The system is now calibrated.

       ◆ To complete a full calibration:

          a. Enter the target rate, the speed, and the total number of nozzles.

          b. Select *Calibrate Now* and then press 🆗 . The *Flow Calibration* screen appears.

          c. Read the information and then press 🆗 . Flow begins.

          d. Collect times samples from at least 3 nozzles separately for a total of 1 minute.

          e. Press 🆗 to stop the flow.

          f. Calculate the volume that you collected per minute per value.

          g. in the *Measured Flow* field, enter the volume that you calculated in the previous step.
            The system calculates the difference between the measured flow/nozzle and the averaged
            flow/nozzle. The *Calibration Complete* screen appears. The flow meter calibration is
            adjusted.

Using the EZ–Boom 2010 System

When the EZ–Boom 2010 system with the EZ–Guide 500 lightbar, note the following:

Rate control

The EZ–Guide 500 lightbar has two options for rate contol:

ITEM	DESRIPTION
On	Application rates are sent from a prescription loaded in the EZ–Guide 500 lightbar or the target rate manually configured on the lightbar.
Off	The EZ–Guide 500 lightbar does not send target rates to the controller.

To configure the *Rate Control* option, select *Configuration / Application Control / Rate Control* .
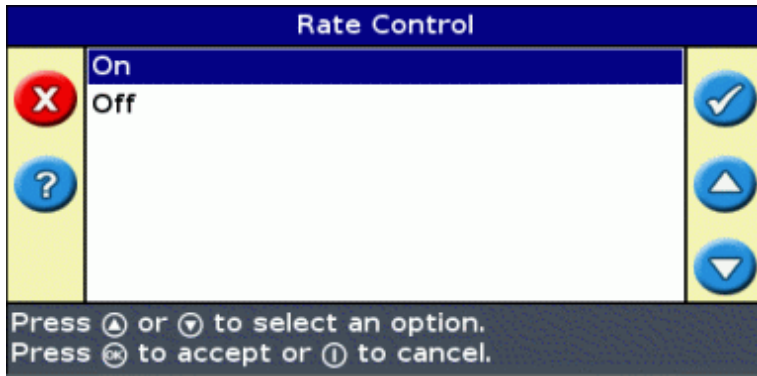
To manually enter a rate to send to the controller, select *Configuration / Application Control / Target Rate* .
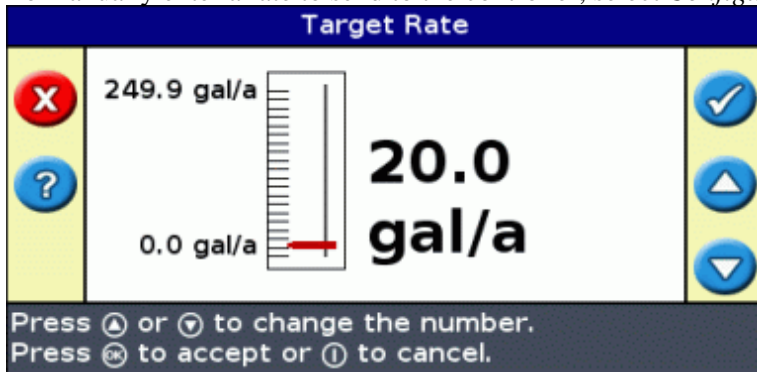
Alternatively, load a prescription so the EZ–Guide 500 lightbar automatically sends target rates to the EZ–Boom 2010 system. For more information, see Prescriptions.

Note: The EZ–Boom rate switch must be set to Rate 1 to use target rates from a prescription file.

Automatic boom switching

The EZ–Guide 500 lightbar will do automatic boom switching for the EZ–Boom 2010 system.

Use the *Swath Control* menu to configure the following settings:

ITEM	DESCRIPTION
Boom Control	Enable or disable automated boom switching contol.
Allowable Overlap	Controls the amount of overlap allowed before a boom section is switched off. For example, if Allowable Overlap is set to: * 99% – 99% of the boom section is allowed to overlap before it is switched off. This provides the least amount of skip. Use this setting if you need to ensure complete coverage and using extra material does not matter. * 50% – half of the boom section is allowed to overlap before it is switched off. * 1% – 1% of the section width is allowed to overlap before it is switched off. This allows the least overlap. Use this setting if you need to conserve the maximum amount of material. *Note: When going from sprayed to unsprayed areas the reverse is true. For example, with 1% Allowable Overlap, the section width has to be in 99% uncovered area before it switches on.*
Boom Valve Latency	Allows you to account for delays in the spray system. For correct operation, you must set this to match the delay in your sprayer.

	There are two settings, measured in seconds: Valve On Latency – the time that it takes for the system to begin spraying after you turn it on. Valve Off Latency – the time that it takes for the system to stop spraying after you turn it off. ***Tip:*** *To calculate the latency values, time your system with a stopwatch*
Intentional Overlap	Allows you to double–spray (buffer) a set distance to ensure complete coverage and avoid skips. There are two settings, measured in distance: On Overlap Distance – the overlap buffer when travelling into an area to be sprayed from an already sprayed area. Spraying begins this distance before the area to be sprayed. Off Overlap Distance – the overlap buffer when leaving the area just sprayed and entering an already sprayed area. Spraying stops this distance outside the area just sprayed.

Manual override

If you switch the Rate switch from Rate 1 or 2 to M (manual), you will get manual rate control but automated boom switching will still be enabled. To obtain complete manual control of the EZ–Boom system (including manual control of the sections) without having to go through the menus:

1. Stop the vehicle.
2. Turn the Master switch to Off.
3. Move the Rate switch to M (manual).
4. Turn the Master switch back on.

The system is now in full manual mode. This can be useful for spraying corners or to continue spraying if you lose GPS signal. To change back to automated mode, move the Rate switch to 1 or 2.

Refilling the tank

There are two ways to refill the tank:

METHOD	DESCRIPTION
Partial refill	Increases the *Current Volume* value by the *Partial Refill Quantity*. This is useful if you add a specific amount of solution to the tank each time you refill it.
Refill	Resets the *Current Volume* value to the *Capacity* volume.

Spraying pivots

If you are using the EZ–Boom 2010 system to spray a pivot, define the outer line of the pivot as your master line and then work inwards. You cannot spray outside the pivot master line.

Spraying in reverse

Spraying in reverse is not supported. If you reverse the vehicle, the onscreen implement remains in place until the vehicle appears to pass over it.

If you need to drive in reverse, set the EZ–Boom controller master switch to Off.

Hardi 5500 Variable Rate Controller

Connecting a Hardi 5500 Controller

Connect the Hardi 5500 variable rate controller to the EZ–Guide 500 lightbar COM port as shown below.
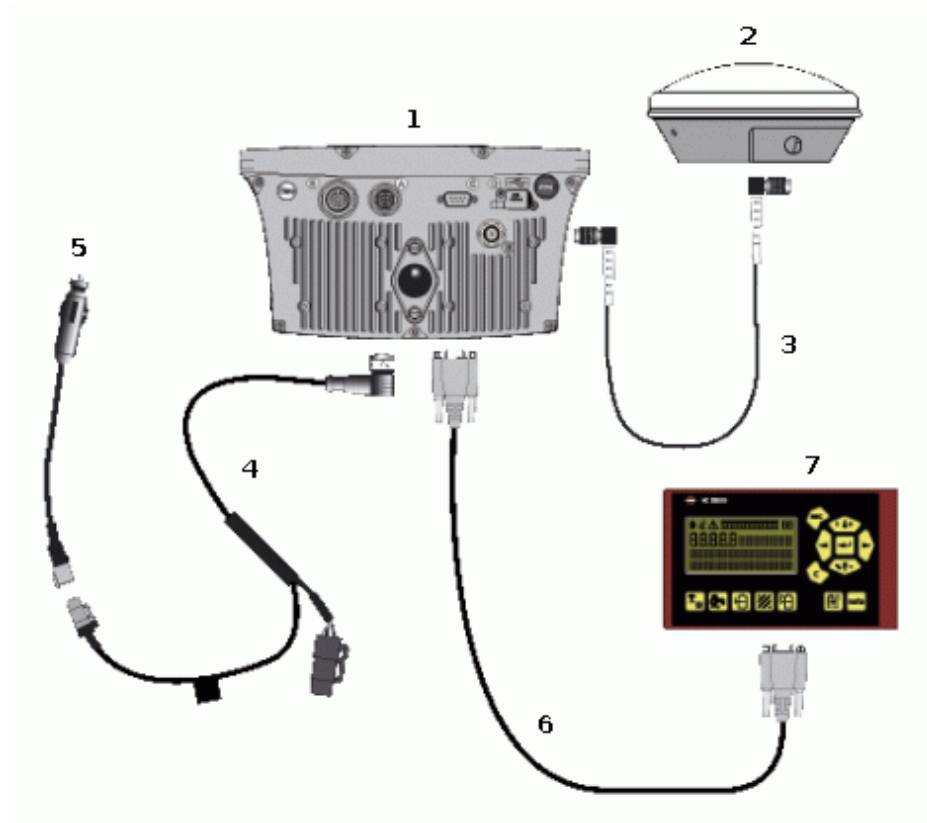
ITEM	DESCRIPTION
1	EZ–Guide 500 lightbar
2	Ag15 antenna
3	Antenna cable (PN 50449)
4	EZ–Guide 500 power cable (PN 62817)
5	To power
6	Hardi 5500 (COM1) to EZ–Guide 500 cable (PN 59043)
7	Hardi 5500 Controller

Note: The Hardi 5500 controller must have firmware version 3.16 or greater installed and have a JOBCOM control box connected for it to work correctly with the EZ–Guide 500 lightbar.

Alternatively, connect the Hardi 5500 variable rate controller to the EZ−Guide 500 lightbar AUX port as shown below.
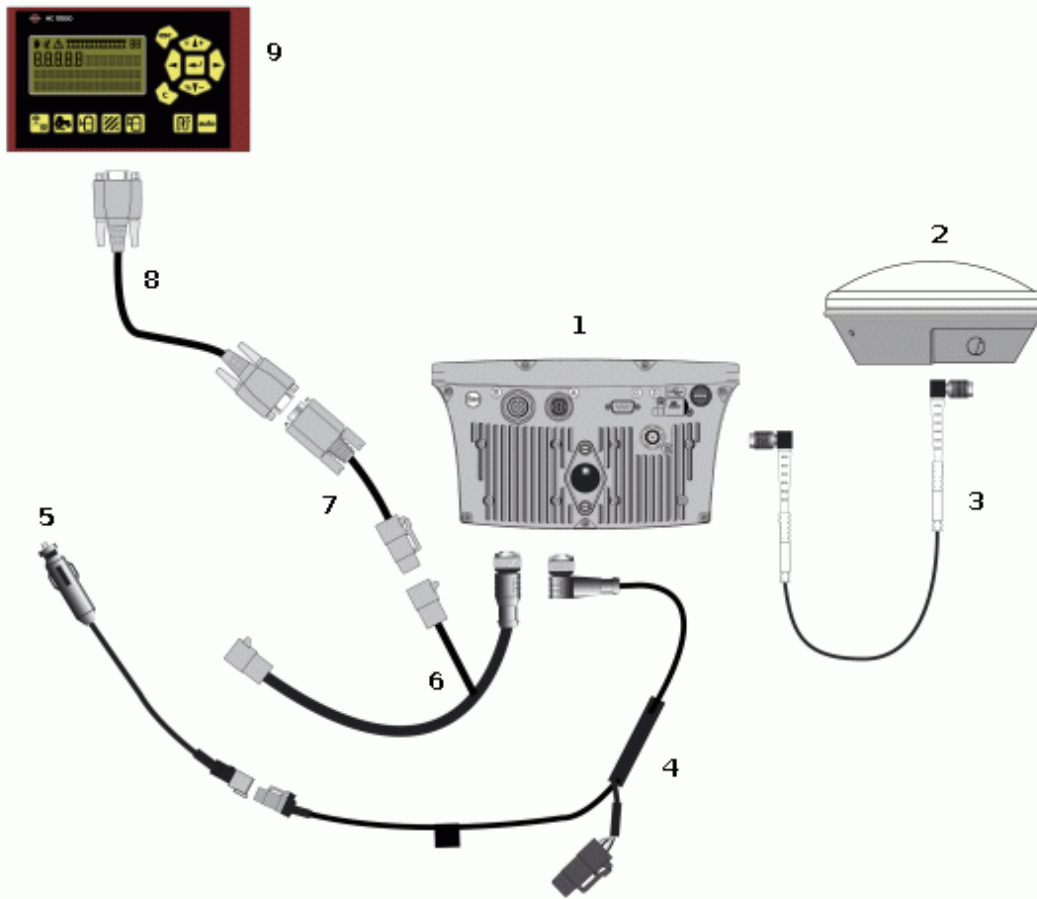
ITEM	DESCRIPTION
1	EZ−Guide 500 lightbar
2	Ag15 antenna
3	Antenna cable (PN 50449)
4	EZ−Guide 500 power cable (PN 62817)
5	To power
6	EZ−Guide 500 AUX port cable (PN 62609)
7	Serial port extender (PN 63076)
8	Hardi 5500 (COM1) to EZ−Guide 500 cable (PN 59043)
9	Hardi 5500 Controller

Note: The Hardi 5500 controller must have firmware version 3.16 or greater installed and have a JOBCOM control box connected for it to work correctly with the EZ−Guide 500 lightbar.

EZ−Guide 500 to Hardi controller cable pinouts

The pinouts for the EZ−Guide 500 to Raven controller cable (PN 59043) is shown below:

TO EZ–GUIDE 500 PINS		TO HARDI PINS
2	—————————	3
3	—————————	2
5	—————————	5

Hardi Controller Setup

To configure the EZ–Guide 500 lightbar to communicate with the Hardi 5500 variable rate controller, do the following:

EZ–Guide 500 lightbar setup

On the EZ–Guide 500 lightbar, do the following:

1. Select *Configuration / Application Control / Controller Settings* .
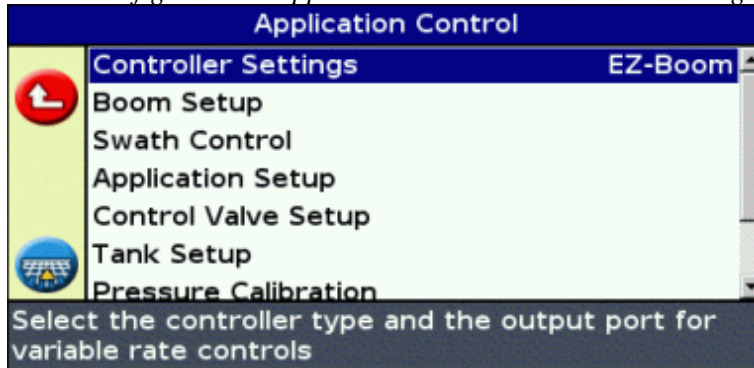
2. Press (OK) . The *Controller Settings* screen appears.
3. Change *Controller type* to Hardi 5500.
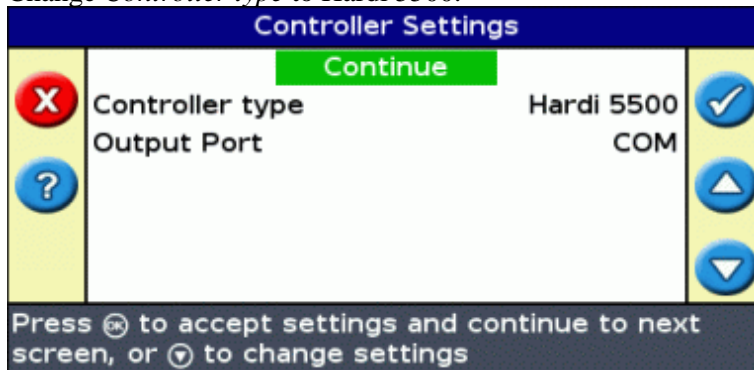
Note: When changing the Controller type, any open field will be closed.

4. Change the *Output Port* to COM or AUX if required, to match the lightbar port that the controller cable is connected to.

   Note: Do not configure the lightbar to output NMEA messages on the same port that the variable rate controller is connected to.

5. Select Continue and press (OK)

6. To configure the number of boom sections and section widths, go to the *Application Control / Boom Setup* menu.

Hardi controller setup

On the Hardi 5500 controller, do the following:

1. On the Hardi 5500 controller, go to the *Settings* menu.
2. Change *Remote* to *Enable* .

For more information on configuring or calibrating the Hardi 5500 controller, refer to the Hardi instruction manual.
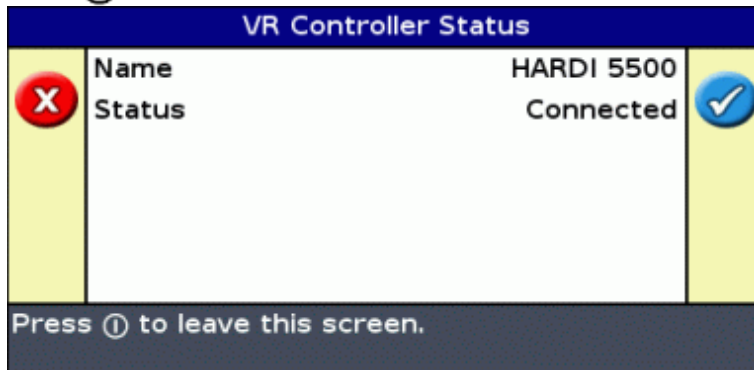
Verify Hardi controller communication

To verify that the EZ−Guide 500 lightbar and the Hardi 5500 variable rate controller are communicating correctly, view the *VR Controller Status* screen. To do this:

1. Select *Configuration / Status / VR Controller Status* .
2. Press (OK) .

3. Verify that Status displays Connected.

   Note: If Status displays Not Connected, verify that the EZ−Guide 500 to Hardi controller cable is securely connected to the EZ−Guide 500 lightbar and the Hardi 5500 controller. If the cable is secure, verify that the EZ−Guide 500 lightbar and Hardi 5500 controller are configured correctly, as detailed above.

On−Screen Features with a Hardi Controller

When the Hardi 5500 variable rate controller is connected to the lightbar, the following features appear or become available:
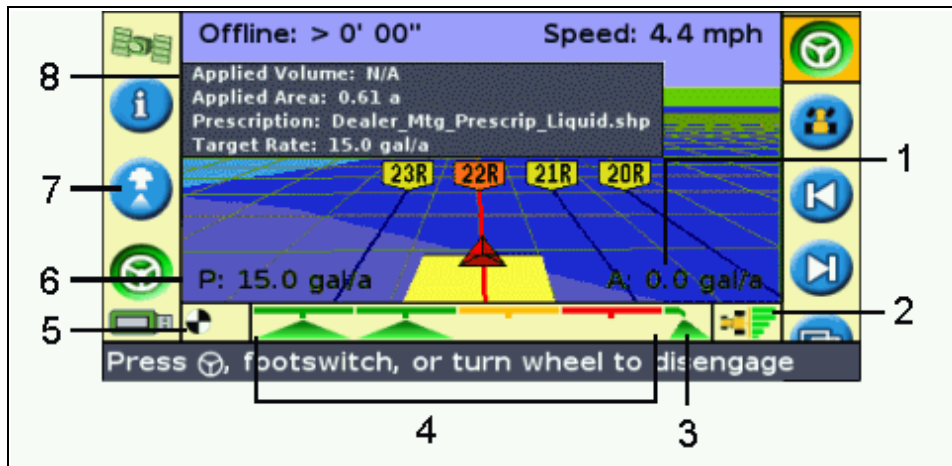
| ITEM	DESCRIPTION
1	The actual current rate *Note: Since the Hardi controller does not report the actual applied rate to the EZ−Guide 500 lightbar, this item will always appear as N/A.*
2	Auto/manual switching indicator shows which switching mode the controller is in. * When the controller is in manual switching mode, the indicator is gray. * When the controller is in automatic switching mode, the indicator is in color.
3	Fence nozzle indicator If a fence nozzle is enabled, an indicator appears. Fence nozzle status is represented with the same colors as the boom sections. *Note: The EZ−Guide 500 lightbar cannot automatically turn fence nozzles on or off. It only displays the current status.*
4	Boom section status indicators change color to show the current state of each boom section: * Green – The boom section is enabled and spraying. * Orange – The boom section is enabled but not currently spraying. * Red – The section is off (the switch is off).
5	Application indicator. The wheel spins when the Hardi master switch is on and the booms are on.
6	The intended target rate *Note: If a prescription is loaded, **P** is displayed to indicate that the prescription rate is being used, rather than the Target 1 rate (**T**)*
7	Application Control menu quick access icon
8	Information tab listing sprayer−specific information

Quick access icon

The icon enables you to access the *Application Control* menu more quickly.
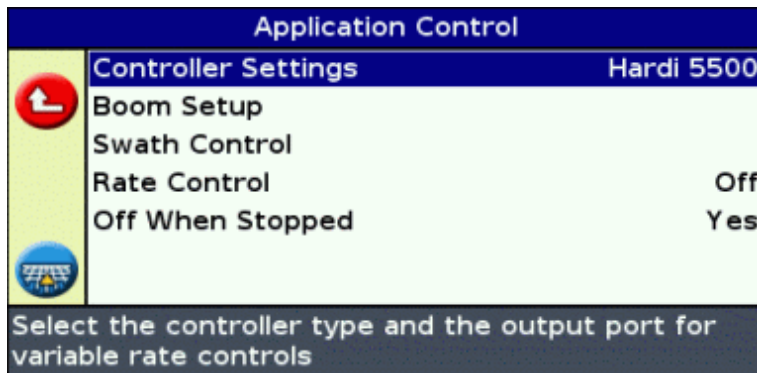
Alternatively, set the *User Mode* to Advanced and then select *Configuration / Application Control.*

Using the Hardi Controller

When using a Hardi variable rate controller with the EZ–Guide 500 lightbar, note the following:

Boom setup

If the boom setup differs between the EZ–Guide 500 lightbar and the Hardi controller, a warning message appears on the lightbar. You must configure the EZ–Guide 500 lightbar to match the Hardi controller. To do this, select *Configuration / Application Control / Boom Setup.*
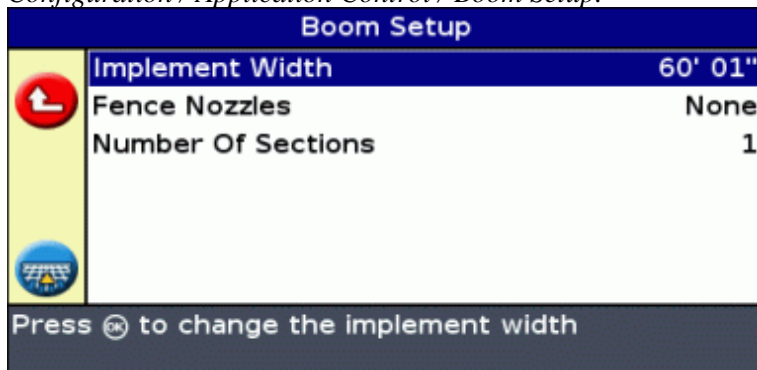
Rate control

The EZ–Guide 500 lightbar has two options for rate contol:

ITEM	DESRIPTION
On	Application rates are sent from a prescription loaded in the EZ–Guide 500 lightbar or the target rate manually configured on the lightbar.
Off	The target rate must be set on the Hardi controller. The EZ–Guide 500 lightbar does not send target rates to the controller. (This is the default setting)

To configure the *Rate Control* option, select *Configuration / Application Control / Rate Control* .
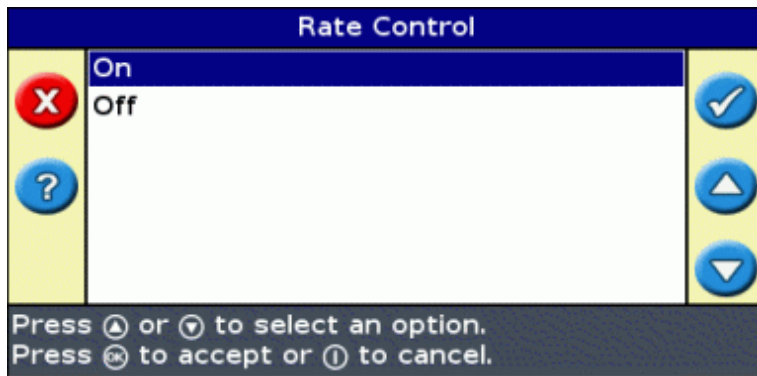
To manually enter a rate to send to the controller, select *Configuration / Application Control / Target Rate* .
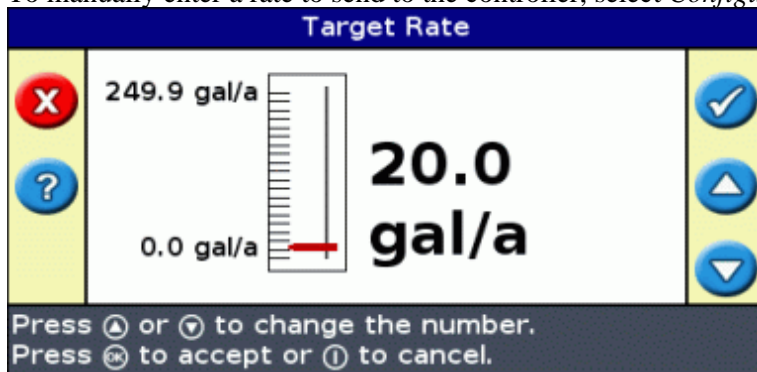
Note: When sending a target rate to the Hardi 5500 controller that is higher than 99.9, the value will be rounded to the nearest whole number. For example, 0–99.9 is not rounded. 101.4 is rounded to 101.

Automatic boom switching

The EZ–Guide 500 lightbar will do automatic boom switching for the Hardi variable rate controller.

Use the *Swath Control* menu to configure the following settings:

ITEM	DESCRIPTION
Boom Control	Enable or disable automated boom switching contol.
Allowable Overlap	Controls the amount of overlap allowed before a boom section is switched off. For example, if Allowable Overlap is set to: * 99% – 99% of the boom section is allowed to overlap before it is switched off. This provides the least amount of skip. Use this setting if you need to ensure complete coverage and using extra material does not matter. * 50% – half of the boom section is allowed to overlap before it is switched off. * 1% – 1% of the section width is allowed to overlap before it is switched off. This allows the least overlap. Use this setting if you need to conserve the maximum amount of material. *Note: When going from sprayed to unsprayed areas the reverse is true. For example, with 1% Allowable Overlap, the section width has to be in 99% uncovered area before it switches on.*
Boom Valve Latency	Allows you to account for delays in the spray system. For correct operation, you must set this to match the delay in your sprayer. There are two settings, measured in seconds: * Valve On Latency – the time that it takes for the system to begin spraying after you turn it on.

	* Valve Off Latency – the time that it takes for the system to stop spraying after you turn it off. *Tip:* *To calculate the latency values, time your system with a stopwatch*
Intentional Overlap	Allows you to double–spray (buffer) a set distance to ensure complete coverage and avoid skips. There are two settings, measured in distance: * On Overlap Distance – the overlap buffer when travelling into an area to be sprayed from an already sprayed area. Spraying begins this distance before the area to be sprayed. * Off Overlap Distance – the overlap buffer when leaving the area just sprayed and entering an already sprayed area. Spraying stops this distance outside the area just sprayed.

Manual override

To manually override automatic boom switching, for example to double–spray or spray in corners, you must change the *Boom Control* option to Manual.
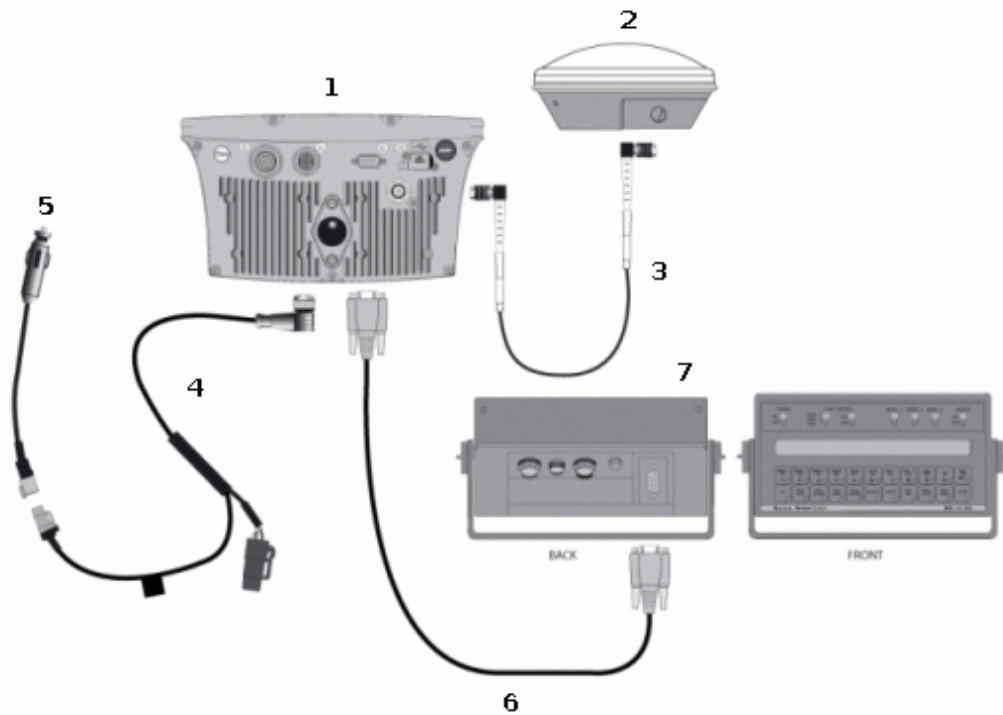
Summary report

Because the Hardi controller does not report the actual applied rate to the EZ–Guide 500 lightbar, the Applied Rate map in the summary report will be empty.

Raven Variable Rate Controller

Connecting a Raven Controller

Connect the Raven variable rate controller to the EZ–Guide 500 lightbar COM port as shown below.

ITEM	DESCRIPTION
1	EZ–Guide 500 lightbar
2	Ag 15 antenna
3	Antenna cable (PN 50449)
4	EZ–Guide 500 power cable (PN 62817)
5	To power
6	Raven to EZ–Guide 500 cable (PN 69729)
7	Raven SCS 400 or 600 series controller

Alternatively, connect the Raven variable rate controller to the EZ–Guide 500 lightbar AUX port as shown below.
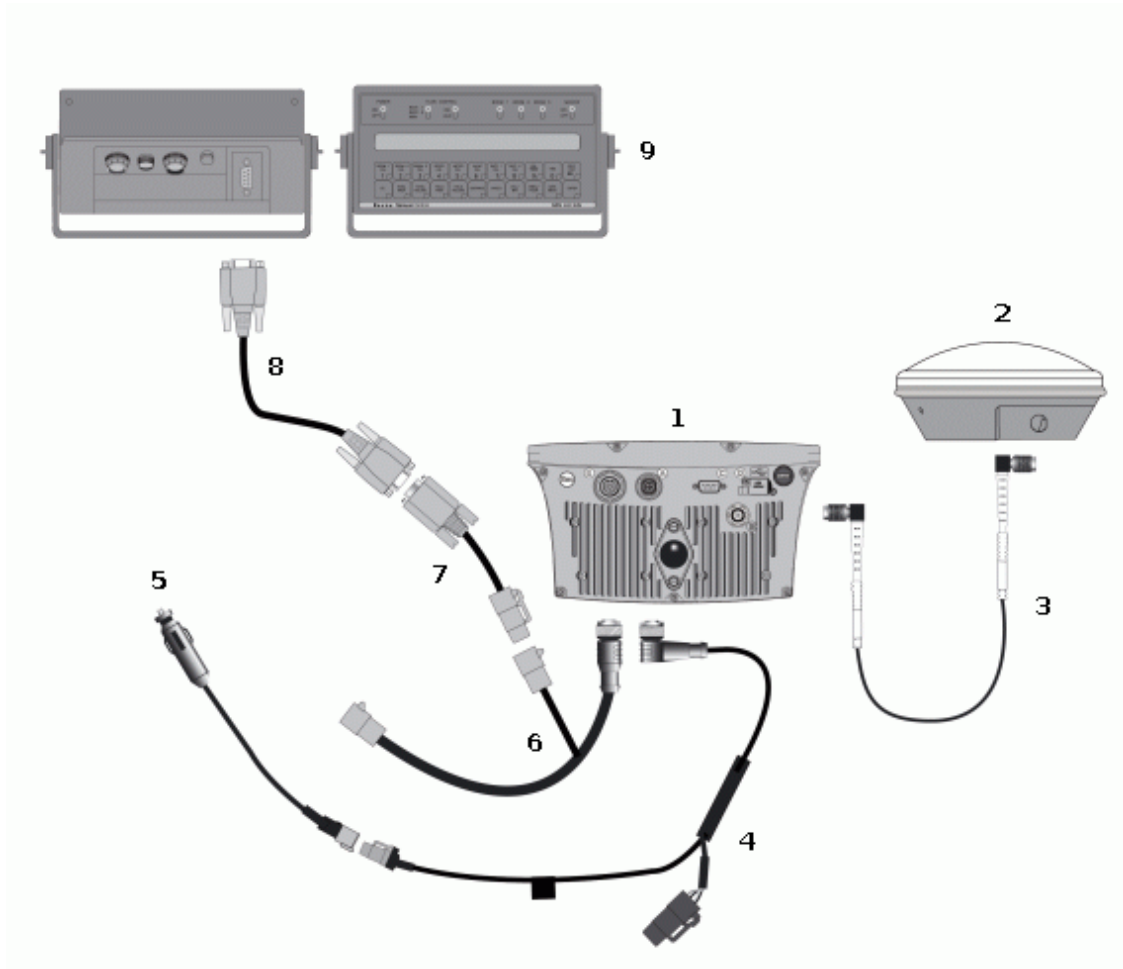
ITEM	DESCRIPTION
1	EZ–Guide 500 lightbar
2	Ag 15 antenna
3	Antenna cable (PN 50449)
4	EZ–Guide 500 power cable (PN 62817)
5	To power
6	EZ–Guide 500 AUX port cable (PN 62609)
7	Serial port extender cable (PN 63076)
8	Raven to EZ–Guide 500 cable (PN 69729)
9	Raven SCS 400 or 600 series controller

Radar speed input

Radar input is required for speed. You can connect either an external radar device, or use cable PN 54805–00, as shown below.
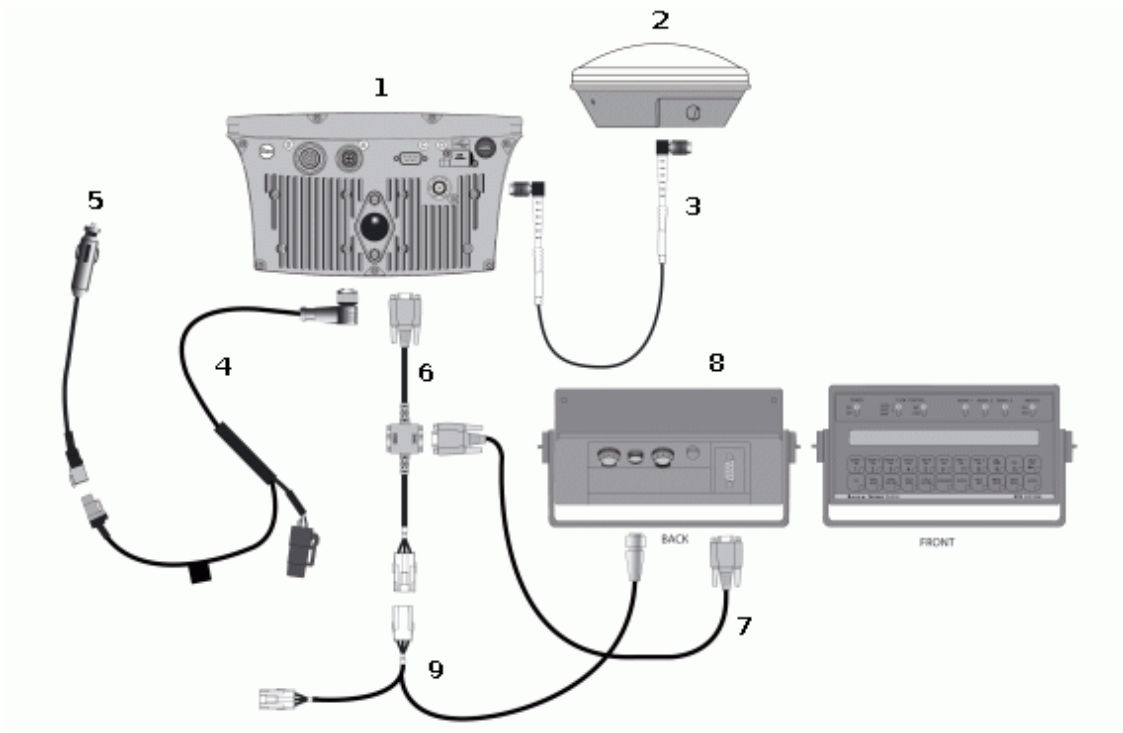
ITEM	DESCRIPTION
1	EZ–Guide 500 lightbar
2	Ag 15 antenna
3	Antenna cable (PN 50449)
4	EZ–Guide 500 power cable (PN 62817)
5	To power
6	External interface cable (PN 62749)
7	Raven to EZ–Guide 500 cable (PN 69729)
8	Raven SCS 400 or 600 series controller
9	Radar cable (PN 54805–00)

EZ–Guide 500 to Raven controller cable pinouts

The pinouts for the EZ–Guide 500 to Raven controller cable (PN 69729) is shown below:

TO EZ–GUIDE 500 PINS		TO RAVEN PINS
2	–––––––––	3
3	–––––––––	2
5	–––––––––	5
	[––––––	4
	[––––––	6
	[––––––	8

Note: Pins 4, 6 and 8 on the Raven connector must be wired together.

Operational Warnings

When using the Raven variable rate controller with the EZ–Guide 500 lightbar, note the following:

- The EZ–Guide 500 lightbar cannot control the status of the Raven controller master or boom switches. This means that the operator must remain in complete control of the sprayer at all times. The EZ–Guide 500 lightbar cannot automatically turn off the sprayer when going outside headlands, across exclusion zones, or previously sprayed areas.
- The sprayer may not always switch off completely when the EZ–Guide 500 sends a zero rate. This means the operator may need to manually turn off the master switch to ensure no spray is applied.
  Note: The only time the EZ–Guide 500 sends a zero rate is when the sprayer is outside a prescription boundary and the "Rate outside polygon" option is set to Zero.
- The operator must ensure that the master switch is off when there is no field open to ensure that no spray is accidentally applied to areas that shouldn't be sprayed, for example, roads, paths, and neighbouring fields.
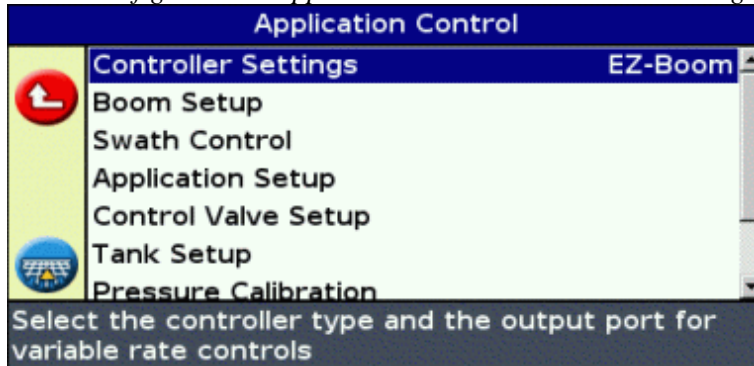
Raven Controller Setup

To configure the EZ–Guide 500 lightbar to communicate with the Raven variable rate controller, do the following:
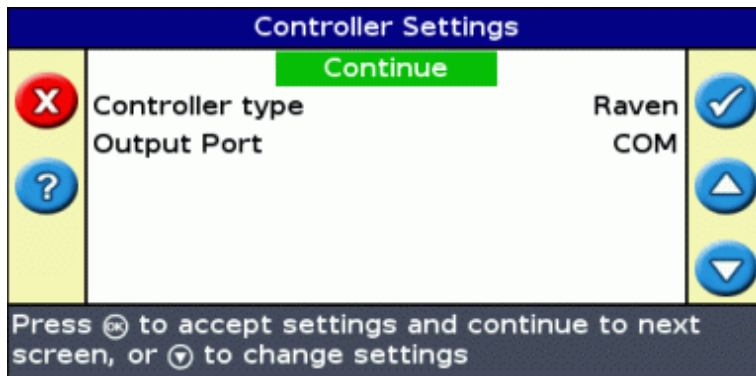
EZ–Guide 500 lightbar setup

On the EZ–Guide 500 lightbar, do the following:

1. Select *Configuration / Application Control / Controller Settings* .

2. Press OK . The *Controller Settings* screen appears.
3. Change *Controller type* to Raven.

Note: When changing the Controller type, any open field will be closed.

4. Change the *Output Port* to COM or AUX if required, to match the lightbar port that the controller cable is connected to.

   Note: Do not configure the lightbar to output NMEA messages on the same port that the variable rate controller is connected to.

5. Select Continue and press OK

6. To configure the number of boom sections and section widths, go to the *Application Control / Boom Setup* menu.

Raven controller setup

On the Raven variable rate contoller, configure the following Data Menu settings:

| ITEM	DESCRIPTION
BAUD or BAUD RATE	9600
GPS	Inac
DLOG or DATA LOG	ON
TRIG or DATA LOG TRIGGER VALUE	1
UNIT or DATA LOG TRIGGER UNITS	sec

Note: In the GPS group, if Send time, Time acknowledge or Close file appears, change them to GPS Inac. Otherwise, the DLOG or DATA LOG option won't appear.

For more information on configuring and calibrating the Raven controller, refer to the Raven instruction manual.

Verify Raven controller communications

To verify that the EZ–Guide 500 lightbar and the Raven variable rate controller are communicating correctly, view the *VR Controller Status* screen. To do this:

1. Select *Configuration / Status / VR Controller Status* .
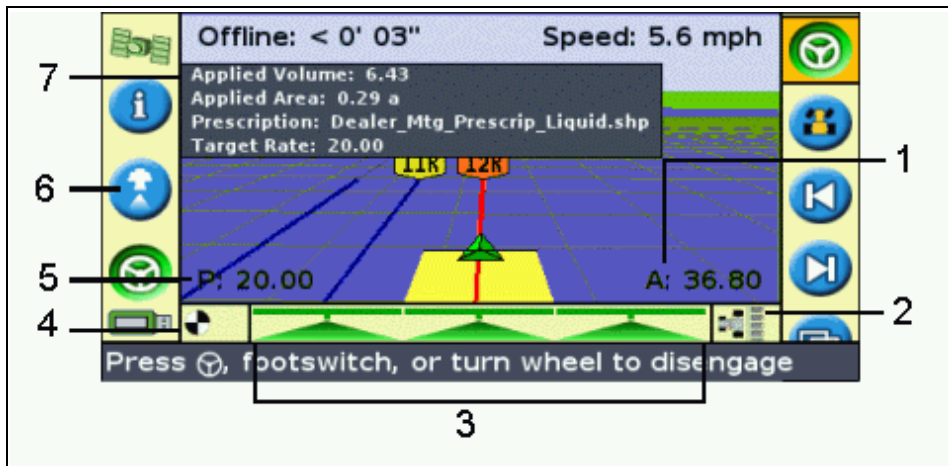2. Press OK .
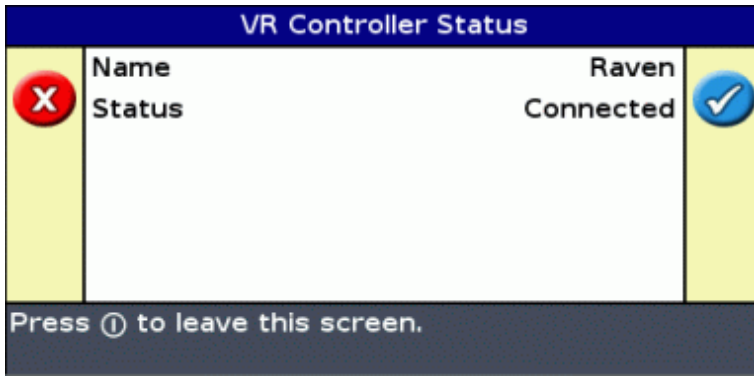
3. Verify that Status displays Connected.

Note: If Status displays Not Connected, verify that the EZ−Guide 500 to Raven controller cable is securely connected to the EZ−Guide 500 lightbar and the Raven controller. If the cable is secure, verify that the EZ−Guide 500 lightbar and Raven controller are configured correctly, as detailed above.

On−Screen Features with a Raven Controller

When the Raven variable rate controller is connected to the lightbar, the following features appear or become available:
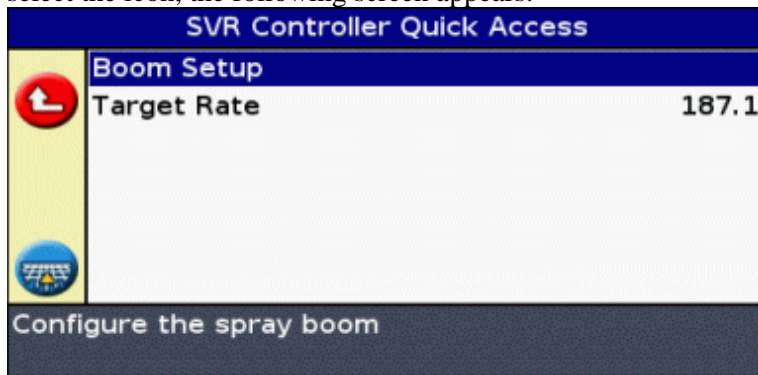

ITEM	DESCRIPTION
1	The actual current rate
2	Switching indicator (grey) shows that the controller is in manual switching mode.
3	Boom section status indicators change color to show the current state of each boom section: * Green – The boom section is enabled and spraying. * Orange – The boom section is enabled but not currently spraying. * Red – The section is off (the switch is off).
4	Application indicator. The wheel spins when the Raven master switch is on and the lightbar receives flow messages reported from the variable rate controller.

5	The intended target rate *Note: If a prescription is loaded, **P** is displayed to indicate that the prescription rate is being used, rather than the Target 1 rate (**T**)*
6	Application Control menu quick access icon
7	Information tab listing sprayer−specific information

Quick access icon

The icon ![icon] enables you to access the most common variable rate controller settings more quickly. When you select the icon, the following screen appears:
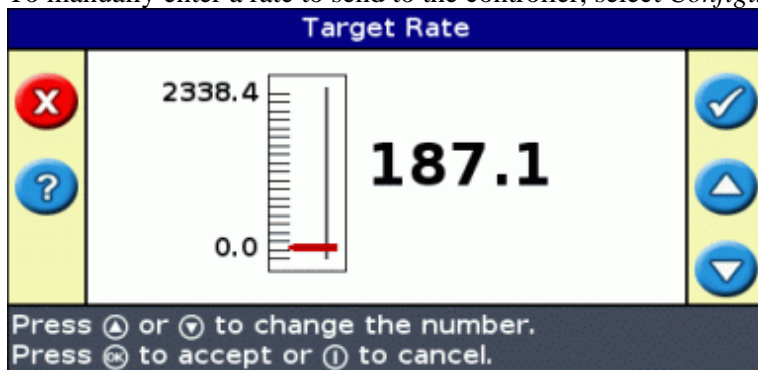

Alternatively, set the *User Mode* to Advanced and then select *Configuration / Application Control.*

Using the Raven Controller

When using a Raven variable rate controller with the EZ−Guide 500 lightbar, note the following:

Target rate

To manually enter a rate to send to the controller, select *Configuration / Application Control / Target Rate .*


Automatic boom switching

The EZ−Guide 500 lightbar will *not* do automatic boom switching for the Raven variable rate controller.

Note: To ensure that areas outside the headland, in exclusion zones, or previously sprayed areas aren't sprayed, you will need to manually turn off the Raven controller master switch.

Rawson Variable Rate Controller

Connecting a Rawson Controller

Connect the Rawson variable rate controller to the EZ–Guide 500 lightbar COM port as shown below.
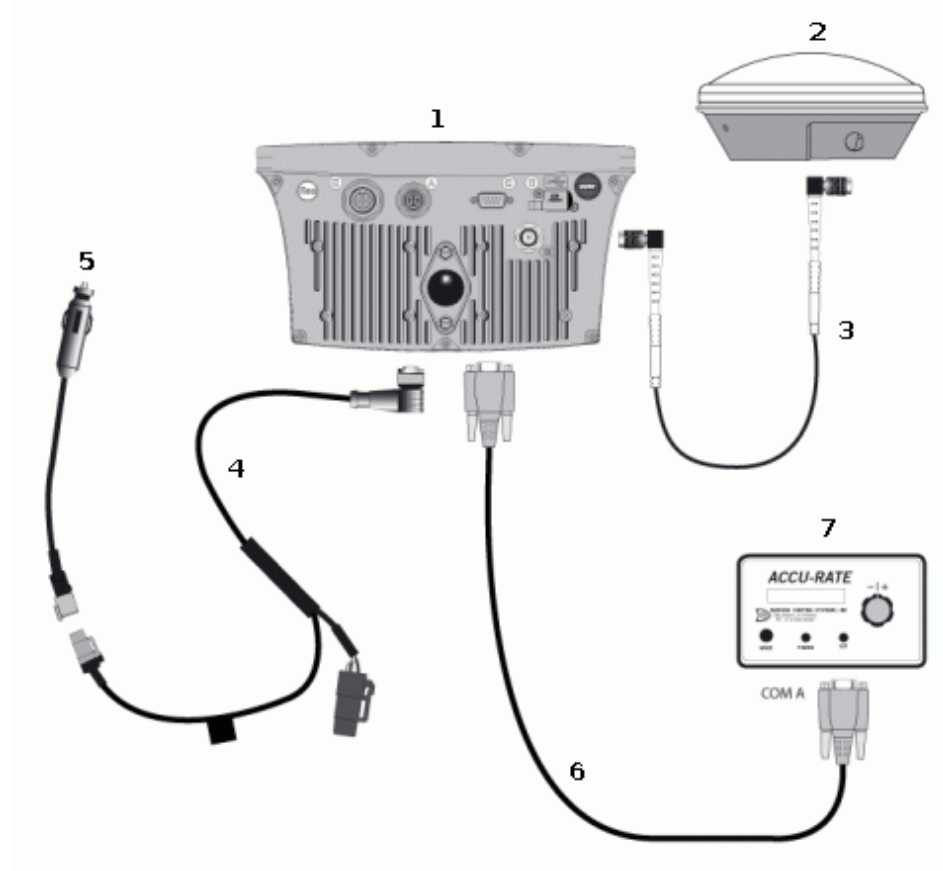
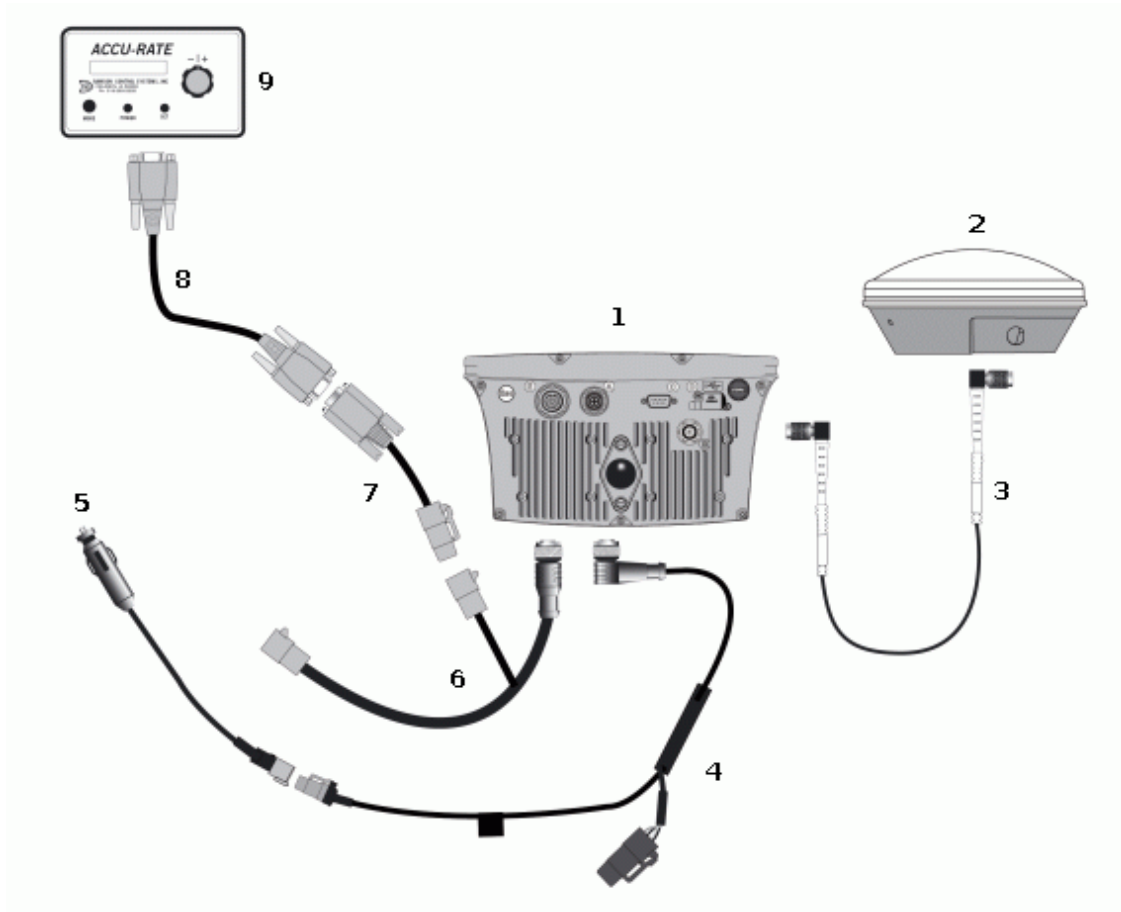| ITEM	DESCRIPTION
1	EZ–Guide 500 lightbar
2	Ag 15 antenna
3	Antenna cable (PN 50449)
4	EZ–Guide 500 power cable (PN 62817)
5	To power
6	Rawson (COM A) to EZ–Guide 500 cable (PN 69730)
7	Rawson Controller

Connect the Rawson variable rate controller to the EZ–Guide 500 lightbar AUX port as shown below.
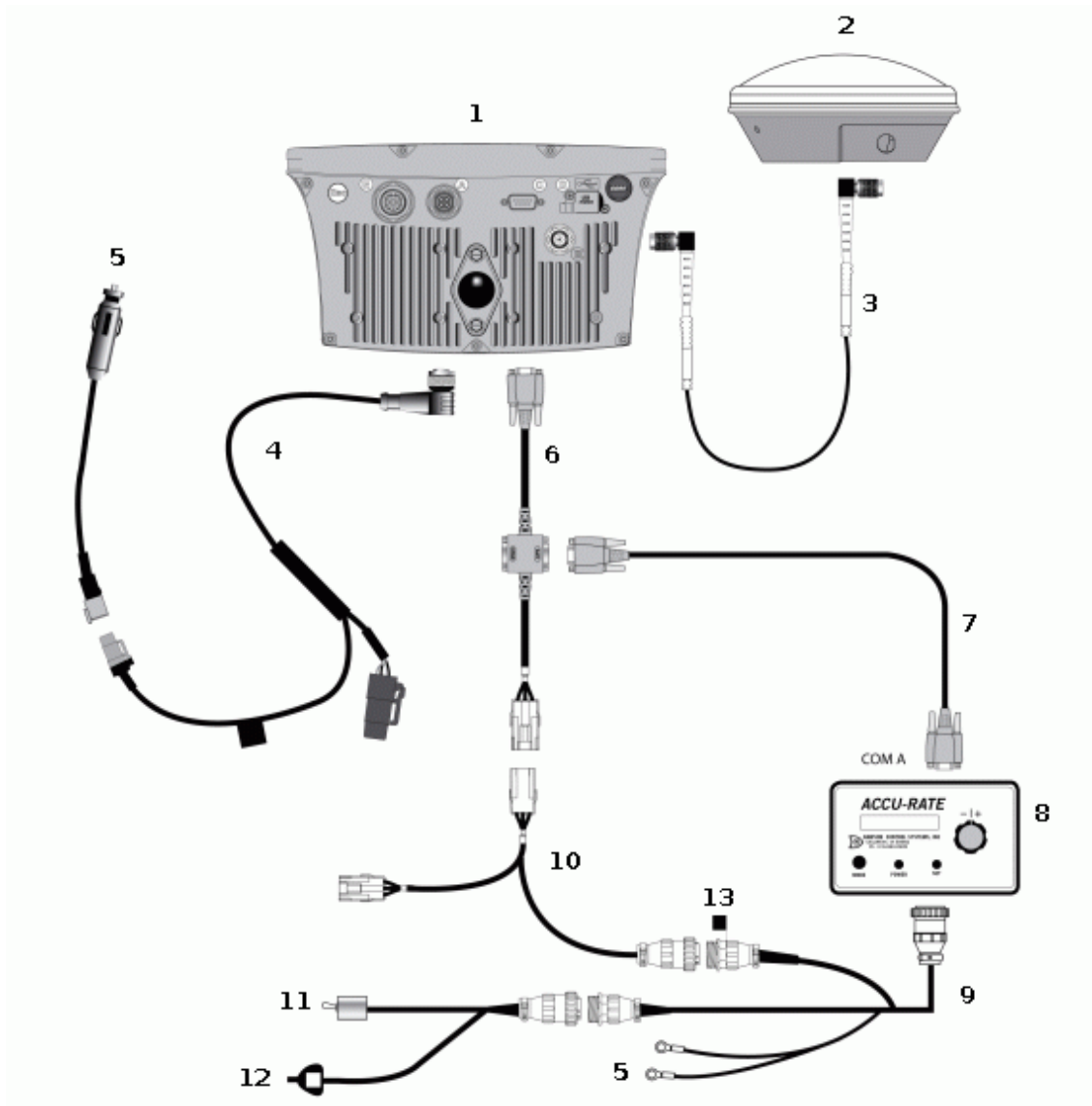
ITEM	DESCRIPTION
1	EZ–Guide 500 lightbar
2	Ag 15 antenna
3	Antenna cable (PN 50449)
4	EZ–Guide 500 power cable (PN 62817)
5	To power
6	EZ–Guide 500 AUX port cable (PN 62609)
7	Serial port extender cable (PN 63076)
8	Rawson (COM A) to EZ–Guide 500 cable (PN 69730)
9	Rawson Controller

Note: The target rate information from the EZ–Guide 500 lightbar is sent to both drives on the Rawson controller.

Radar speed input

Radar input is required for speed. You can connect either an external radar device, or use cable PN 54806–00, as shown below.

ITEM	DESCRIPTION
1	EZ–Guide 500 lightbar
2	Ag 15 antenna
3	Antenna cable (PN 50449)
4	EZ–Guide 500 power cable (PN 62817)
5	To power
6	External interface cable (PN 62749)
7	Rawson (COM A) to EZ–Guide 500 cable (PN 69730)
8	Rawson controller
9	Rawson power cable (Rawson PN 307670)
10	Radar cable (PN 54806–00)
11	Master switch
12	Drive A/B selector switch (if fitted)
13	Radar input

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EZ–Guide 500 to Rawson controller cable pinouts

The pinouts for the EZ–Guide 500 to Rawson controller cable (PN 69730) is shown below:

TO EZ–GUIDE 500 PINS		TO RAWSON PINS
2	––––––––––	2
3	––––––––––	3
5	––––––––––	5
	[––––––	4
	[––––––	6
	[––––––	7

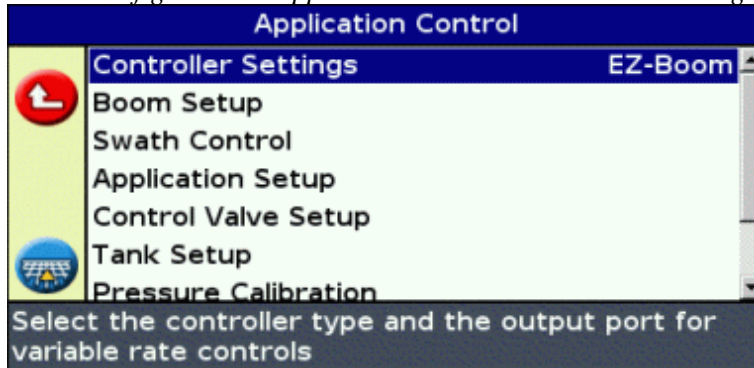*Note: Pins 4, 6 and 7 on the Rawson connector must be wired together.*

Rawson Controller Setup

To configure the EZ–Guide 500 lightbar to communicate with the Rawson variable rate controller, do the following:
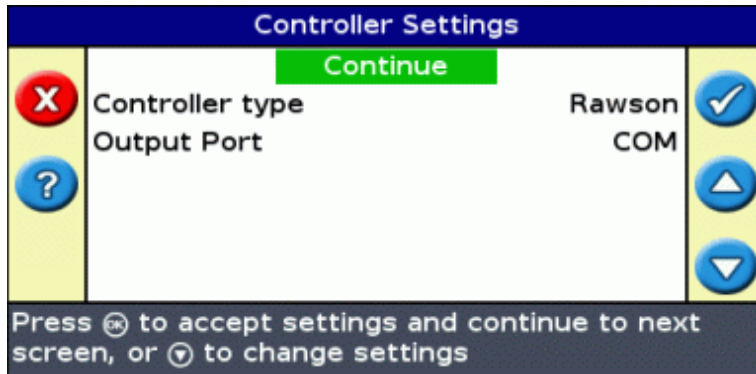
EZ–Guide 500 lightbar setup

On the EZ–Guide 500 lightbar:

1. Select *Configuration / Application Control / Controller Settings* .

2. Press (OK) . The *Controller Settings* screen appears.
3. Change *Controller type* to Rawson.

Note: When changing the Controller type, any open field will be closed.

4. Change the *Output Port* to COM or AUX if required, to match the lightbar port that the controller cable is connected to.

   Note: Do not configure the lightbar to output NMEA messages on the same port that the variable rate controller is connected to.

5. Select Continue and press ⓪ⓚ
6. To configure the number of boom sections and section widths, go to the *Application Control / Boom Setup* menu.

Rawson controller setup

To allow the EZ–Guide 500 lightbar to change the rates on the controller, the controller must first be in GPS mode. If this is not done, the EZ–Guide 500 lightbar will only log the rates being used.

On the Rawson controller:

1. Verify that the Rawson controller is set to GPS mode. To do this:
   a. Turn the controller on.
   b. Press the **MODE** button twice.
   c. Press the **SET** button to switch the controller between GPS and non–GPS mode.
2. Verify the default target rate and step size. You will need to enter these values into the EZ–Guide 500 lightbar.

Note: The baud rate used by the controller must be set to 9600 baud.

For more information on configuring and calibrating the Rawson controller, refer to the Rawson instruction manual.

Verify Rawson controller communication

To verify that the EZ–Guide 500 lightbar and the Rawson variable rate controller are communicating correctly, view the *VR Controller Status* screen. To do this:

1. Select *Configuration / Status / VR Controller Status* .
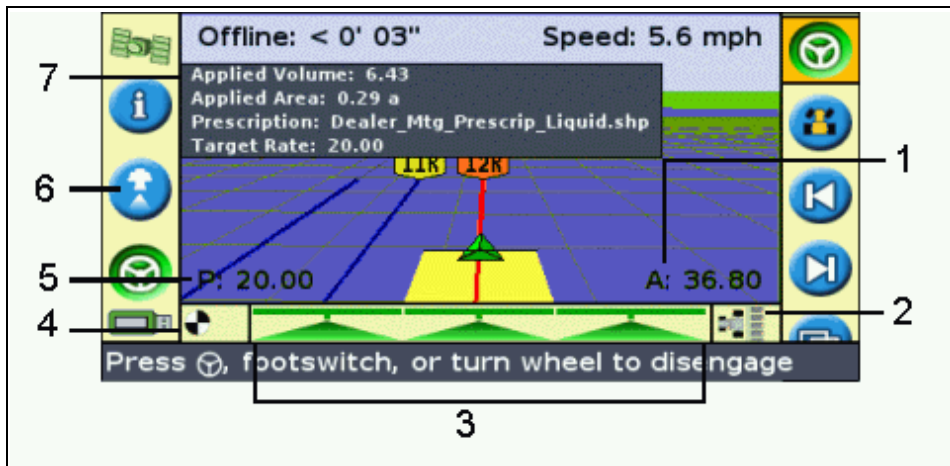2. Press ⓪ⓚ .
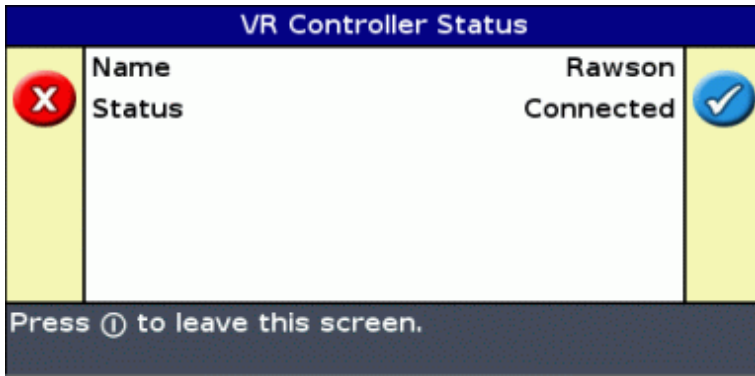
3. Verify that Status displays Connected.

Note: If Status displays Not Connected, verify that the EZ−Guide 500 to Rawson controller cable is securely connected to the EZ−Guide 500 lightbar and the Rawson controller. If the cable is secure, verify that the EZ−Guide 500 lightbar and Rawson controller are configured correctly, as detailed above.

On−Screen Features with a Rawson Controller

When the Rawson variable rate controller is connected to the lightbar, the following features appear or become available:

ITEM	DESCRIPTION
1	The actual current rate
2	Switching indicator (grey) shows that the controller is in manual switching mode.
3	Boom section status indicators change color to show the current state of each boom section: * Green – The boom section is enabled and spraying. * Red – The section is off (the switch is off).
4	Application indicator. The wheel spins when the Rawson master switch is on and the unit is reporting it is running.
5	

	The intended target rate *Note: If a prescription is loaded, **P** is displayed to indicate that the prescription rate is being used, rather than the Target 1 rate (**T**)*
6	Application Control menu quick access icon
7	Information tab listing sprayer–specific information

Quick access icon

The icon ⊕ enables you to access the most common variable rate controller settings more quickly. When you select the icon, the following screen appears:


Alternatively, set the *User Mode* to Advanced and then select *Configuration / Application Control.*

Using the Rawson Controller

When using a Rawson variable rate controller with the EZ–Guide 500 lightbar, note the following:
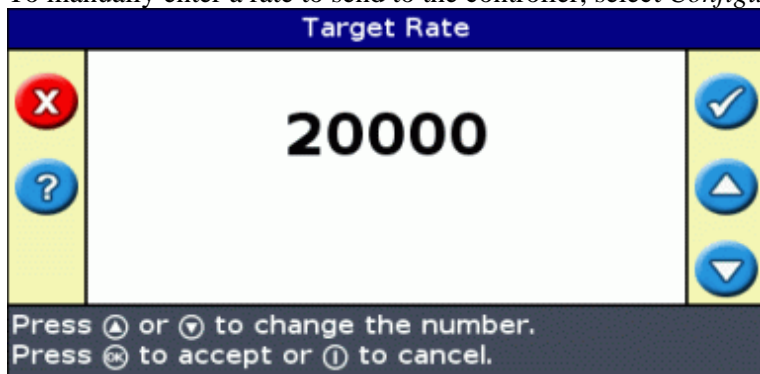
Default rate and step size

The values entered for *Default Rate* and *Step Size* on the EZ–Guide 500 lightbar must match the values entered on the Rawson controller when they are first plugged in.
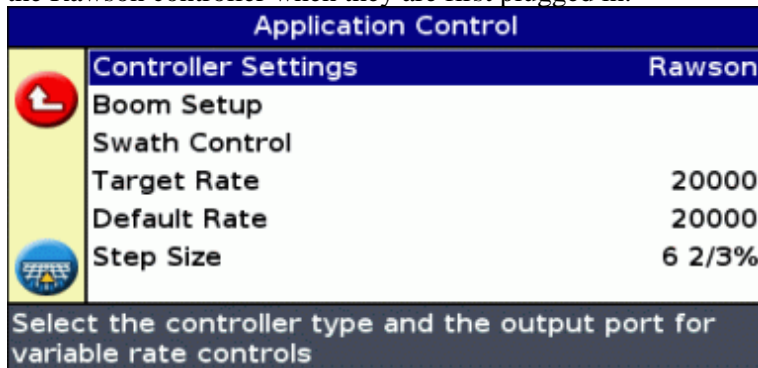
Target rate

To manually enter a rate to send to the controller, select *Configuration / Application Control / Target Rate* .

Note: The Target Rate screen will give the same set of steps as available using the control knob on the Raven controller.

Alternatively, load a prescription so the EZ–Guide 500 lightbar automatically sends target rates to the Rawson controller. For more information, see Prescriptions.

Note: When using a prescription with the Rawson controller, the target rates in the prescription must match the step sizes in the Rawson controller. For example, if the default is 25000 and the step size is 4%, then the target rate values accepted by the Rawson controller are 26000, 27000, 28000...40000. Otherwise, the Rawson controller may not be able to apply the correct rate.

Note: When the EZ–Guide 500 lightbar is sending target rates to the Rawson controller, the Target Rate screen on the Rawson controller will always be displayed. To change or view any other screen on the Rawson controller, you will need to unplug the EZ–Guide 500 cable.

Automatic boom switching

The EZ–Guide 500 lightbar will do automatic boom switching for the Rawson variable rate controller. However, it only turns the whole boom on or off. Individual boom sections are not automatically controlled.

Use the *Swath Control* menu to configure the following settings:

ITEM	DESCRIPTION
Boom Control	Enable or disable automated boom switching contol.
Allowable Overlap	Controls the amount of overlap allowed before a boom section is switched off. For example, if Allowable Overlap is set to: * 99% – 99% of the boom section is allowed to overlap before it is switched off. This provides the least amount of skip. Use this setting if you need to ensure complete coverage and using extra material does not matter. * 50% – half of the boom section is allowed to overlap before it is switched off. * 1% – 1% of the section width is allowed to overlap before it is switched off. This allows the least overlap. Use this setting if you need to conserve the maximum amount of material. *Note: When going from sprayed to unsprayed areas the reverse is true. For example, with 1% Allowable Overlap, the section width has to be in 99% uncovered area before it switches on.*
Boom Valve Latency	Allows you to account for delays in the spray system. For correct operation, you must set this to match the delay in your sprayer. There are two settings, measured in seconds:

	* Valve On Latency – the time that it takes for the system to begin spraying after you turn it on. * Valve Off Latency – the time that it takes for the system to stop spraying after you turn it off. ***Tip:*** *To calculate the latency values, time your system with a stopwatch*
Intentional Overlap	Allows you to double–spray (buffer) a set distance to ensure complete coverage and avoid skips. There are two settings, measured in distance: * On Overlap Distance – the overlap buffer when travelling into an area to be sprayed from an already sprayed area. Spraying begins this distance before the area to be sprayed. * Off Overlap Distance – the overlap buffer when leaving the area just sprayed and entering an already sprayed area. Spraying stops this distance outside the area just sprayed.

Manual override

To manually override automatic boom switching, for example to double–spray or spray in corners, you must change the *Boom Control* option to Manual.